

***PERLESTA ETNIERI* (PLECOPTERA: PERLIDAE), A NEW SPECIES OF  
STONEFLY FROM TENNESSEE**

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ABSTRACT.—A new species of stonefly, *Perlesta etnieri* is described from Maury and Williamson counties, Tennessee. It is a member of the *nelsoni* species group but can be distinguished from included species by the absence of two well-defined patches of sensilla basiconica on tergum 10 and by the dark body coloration. Additionally, new Tennessee state records are reported: *P. adena* Stark (Sumner, Trousdale, and Williamson counties) and *P. lagoi* Stark (Bledsoe and Cumberland counties).

*Key Words:* Plecoptera, Perlidae, *Perlesta*, new species

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The stonefly genus *Perlesta* now rivals *Neoperla* and *Acroneuria* in numbers of species in North America, a remarkable fact considering that during most of the 20th century only a single widespread species was recognized (Stark 1989). Currently, seventeen species are recognized (Stark 1989, Poulton and Stewart 1991, Stark and Rhodes 1997, Kirchner and Kondratieff 1997, DeWalt et al. 1998, Kondratieff and Baumann 1999). Recently, DeWalt et al. (2001) reviewed the *Perlesta* of Illinois, documenting eight species for the state.

A new species of *Perlesta* was discovered among material from Tennessee submitted for identification by Dr. David A. Etnier, University of Tennessee. The authors collected additional adult material from the Harpeth River. This species is described below. The descriptive terminology follows Stark (1989).

***Perlesta etnieri* Kondratieff and  
Kirchner, new species**

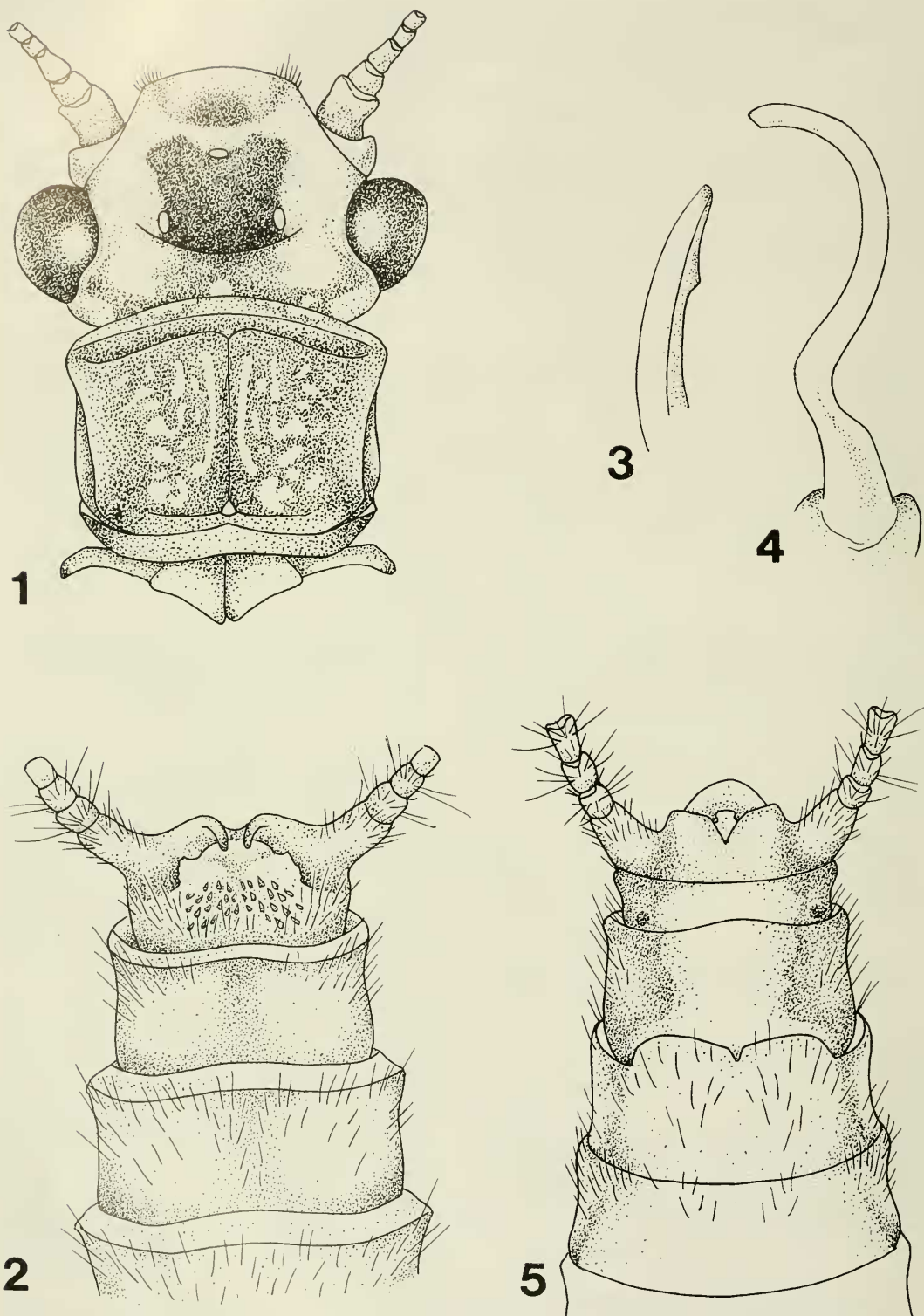
(Figs. 1–6)

Male.—Forewing length 8–9 mm. General body color black in life, brown in alcohol. Head yellow with black to brown ocellar patch and dark spot anterior to patch (Fig. 1). Wings black to brown except for pale costal margin. Femora yellow, distally and dorsally brown, tibiae brown with apices yellow. Abdominal terga black to brown, sterna yellow brown but darker brown apically. Cercus yellow basally, each segment posteriorly brown, distal segments brown. Tergum 10 mesal sclerite shiny dark brown, not divided, sensilla basiconica distinct but small, not elevated into patches (Fig. 2). Paraproct in lateral view, long, slender, slightly curved posteriad at apex, small mesoapical tooth (Fig. 3) not visible in caudal aspect. Penis tube + sac long, caecum absent (Fig. 4).

Female.—Forewing length 10–12 mm. Color pattern similar to male but paler. Sub-

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<sup>1</sup> The views of the author do not purport to reflect the position of the Department of the Army or the Department of Defense.



Figs. 1-5. *Perlesta emieri*. 1, Adult head and pronotum. 2, Male terminalia, dorsal. 3, Paraproct, lateral. 4, Penis. 5, Female subgenital plate, ventral.

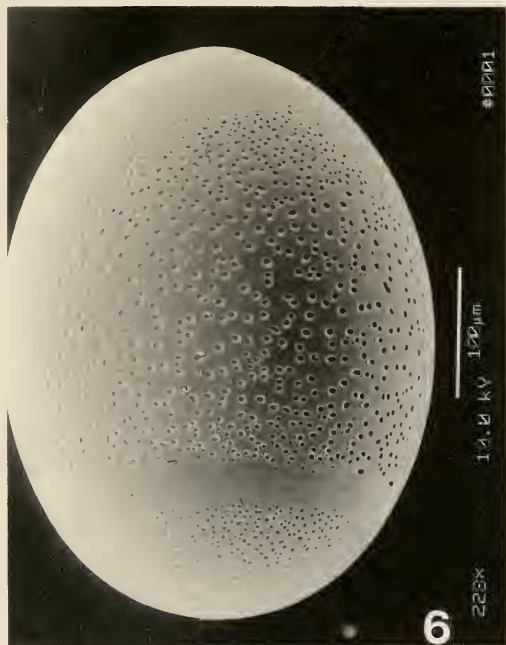


Fig. 6. *Perlesta etnieri*. Scanning electron photomicrograph of egg.

genital plate lobes short, truncate and separated by small V-shaped notch (Fig. 5).

Egg.—Collar sessile. Chorion surface covered with shallow irregular pits. Wide smooth eclosion line, with micropyles located at upper margin of line (Fig. 6).

Nymph.—Undescribed.

Material examined.—Holotype ♂, Tennessee, Williamson Co., Harpeth River at Millview, Arno Road (N35°52'41.0" W86°47'27.1"), 11 May 2000, R. F. Kirchner and B. C. Kondratieff. Paratypes, same data as Holotype, 18 ♂, 4 ♀; same location but 19 May 1998, R. B. Evans, 46 ♂, 25 ♀; Maury Co., Carters Creek, at Carters Creek, Carters Creek Road (N35°43'02.7" W86°59'44.7"), 19 May 1998, R. B. Evans, 32 ♂, 40 ♀.

The holotype is deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC. Paratypes will be deposited at the following museums and individual collections: Bill P. Stark, Clinton, Mississippi (BPS), C. P. Gillette Museum of

Arthropod Diversity, Colorado State University (CSU), Illinois Natural History Survey (INHS), and Ralph F. Kirchner (RFK), Huntington, West Virginia.

Etymology.—We honor Dr. David A. Etnier, University of Tennessee, a well-known North American ichthyologist and trichopterist.

Diagnosis.—*Perlesta etnieri* belongs to a species group including *P. frisoni* Banks, *P. nelsoni* Stark, and *P. teaysia* Kirchner and Kondratieff, males of which are characterized by a long and slender penis tube + sac that lacks a caecum (Fig. 4). The following key will distinguish these species. *Perlesta etnieri* is very similar and closely related to *P. nelsoni*, but the male can be distinguished by the darker pigmentation of the body and short distinct sensilla basiconica on tergum 10 (Fig. 2). The male of *P. nelsoni* is pale yellow and the sensilla basiconica are reduced (see Stark 1989, fig. 65). The long and slender paraprocts of *P. etnieri* with the apex curved posteriad and a mesoapical tooth (Fig. 3) are suggestive of *P. browni* Stark, a species known only from Arkansas and Oklahoma (Stark 1989, Poulton and Stewart 1991), and *P. cinctipes* (Banks) known from Illinois, Iowa, Kansas, Missouri, Nebraska and Oklahoma. The distinctive aedeagus of *P. etnieri* (Fig. 4) distinguishes it from the above species.

The egg of *P. etnieri* is similar to *P. cinctipes* (see Stark 1989, fig. 17), but in *P. etnieri* the chorion is covered with shallow irregular pits, but the collar is sessile. The egg of *P. nelsoni* has a smooth chorion and a short slender collar (Stark 1989). Additionally, the subgenital plate of *P. etnieri* has a small V-shaped notch (Fig. 5), whereas the subgenital plate of *P. nelsoni* has a deep U-shaped notch (see Stark 1989, fig. 68).

Other adult stoneflies collected at the type locality were *Allocapnia granulata* (Claassen), *A. rickeri* Frison, *A. tennesa* Ross and Ricker, *Isoperla* sp., *Acroneuria frisoni* Stark and Brown, *Perlinella ephyre*

(Newman), *Perlesta adena* Stark, and a single female of another species of *Perlesta*.

KEY TO SPECIES OF THE *PERLESTA NELSONI*  
SPECIES GROUP

MALES

1. Penis without caecum (Fig. 4) . . . . . 2
- Penis with a caecum (Stark 1989, fig. 1) . . . . .  
. . . . . not keyed here  
(see Stark 1989, DeWalt et al. 2001)
2. T10 sensilla basiconica numerous, arranged in a pair of slightly elevated, circular patches (Stark 1989, figs. 51–52; Kirchner and Kondratieff 1997, fig. 2) . . . . . 3
- T10 sensilla basiconica sparse, not in two patches (Fig. 2) . . . . . 4
3. Paraprocts with spine on anteroapical margin (Stark 1989, fig. 52) . . . . . *P. frisoni*
- Paraprocts without spine on anteroapical margin (Kirchner and Kondratieff 1997, figs. 3 and 4) . . . . . *P. teaysia*
4. Wing membrane, veins and body pale yellow . . . . . *P. nelsoni*
- Wing membrane, veins and body dark brown to black . . . . . *P. etnieri*

NEW TENNESSEE RECORDS

We report two new state records for Tennessee. *Perlesta lagoi* Stark, a widespread midwestern species (Stark 1989, DeWalt et al. 2001) is reported for the first time from the Cumberland Plateau region. This species is similar to, and can be confused with *P. decipiens* (Walsh). Additionally, *P. adena* Stark, previously known only from Ohio, was collected in abundance from several small streams of the Eastern Highland Rim of the Interior Plateau region of north central Tennessee. This same region has also yielded the rare and presumably imperiled perlodid stonefly *Hydroperla rickeri* (Stark) (Nelson 1996), and the rare leptophlebiid mayfly *Paraleptophlebia kirchneri* Kondratieff and Durfee (Wiersema and Long 2000).

Material examined.—*Perlesta lagoi*: Tennessee, Bledsoe Co., Sequatchie River at Ninemile (N35°41'30.0" W85°05'00.0"), 12 May 2000, R. F. Kirchner and B. C. Kondratieff, 4 ♂, 2 ♀ (CSU); Cumberland Co., Daddys Creek at Big Lick, US-127 South of Crossville (N35°48'23.2"

W85°01'17.8"), 12 May 2000, R. F. Kirchner and B. C. Kondratieff, 1 ♂ (BPS).

*Perlesta adena*: Tennessee, Sumner Co., small stream to Little Trammel Creek, at Turners Station (N36°36'25.2" W86°16'25.9"), 11 May 2000, R. Kirchner and B. Kondratieff, 15 ♂, 1 ♀, 12 nymphs (CSU, RFK); Trousdale Co., tributary to Rocky Creek, at Philippi Church (N36°23'21.9" W86°15'18.6"), 5 miles W of Hartsville, 11 May 2000, R. Kirchner and B. Kondratieff, 63 ♂, 9 ♀, 15 nymphs (CSU, RFK, BPS); same location as Philippi Church, 25 May 1999, B. P. Stark, 11 ♂, 3 ♀, 2 nymphs (BPS); Williamson Co., Harpeth River at Millview, Arno Road (N35°52'41.0" W86°47'27.1"), 11 May 2000, R. F. Kirchner and B. C. Kondratieff, 2 ♂ (CSU).

ACKNOWLEDGMENTS

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